REMARKS

In the Office Action, the Examiner objected to claims 32-33, 35, 41-42 and 44 for informalities. The Examiner also rejected claims 27-32, 36-41 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 17, 33 and 48 of United States Patent 6,651,233 issued to Teig, et al. ("Teig"). Furthermore, the Examiner provisionally rejected claims 27-44 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 27-46 of co-pending United States Application 10/047,978 and over claims 27-38 of co-pending Application 10/046,864. Moreover, the Examiner rejected claims 27-32 and 36-41 under 35 U.S.C. §102(e) as being anticipated by United States Patent 5,218,551 issued to Agrawal, et al. ("Agrawal"). The Examiner also rejected claims 27-32 and 36-41 under 35 U.S.C. §102(e) as being anticipated by United States Patent 5,784,289 issued to Wang ("Wang"). The Examiner also objected to claims 33-35 and 42-44 as being dependent upon a rejected base claim.

In this Amendment, Applicants have amended claims 27, 32-33, 35-36, 41-42 and 44. Applicants have not added or canceled any claim. Accordingly, claims 27-44 will be pending in the application after entry of this Amendment.

I.   Objection to Claims 32-33, 35, 41-42 and 44

In the Office Action, the Examiner objected to claims 32-33, 35, 41-42 and 44 for lack of proper antecedent basis. Applicants have amended claims 32-33, 35, 41-42 and 44. Applicants respectfully submit that claims 32-33, 35, 41-42 and 44 do not lack proper antecedent basis.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the objection to claims 32-33, 35, 41-42 and 44.

II. Rejection of Claims 27-44 Under Judicially Created Doctrine of Obviousness-Type Double Patenting

In the Office Action, the Examiner also rejected claims 27-32, 36-41 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 17, 33 and 48 of United States Patent 6,651,233 issued to Teig, et al. ("Teig"). Furthermore, the Examiner provisionally rejected claims 27-44 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 27-46 of co-pending United States Application 10/047,978 and over claims 27-38 of co-pending Application 10/046,864.

Applicants have concurrently submitted a Terminal Disclaimer in compliance with 37 CFR 1.321(c) to overcome the above actual and provisional rejection based on the non-statutory double patenting ground. In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejection to claims 27-44.

III. Rejection of Claims 27-32 Under §102(e)

In the Office Action, the Examiner rejected claims 27-32 under §102(e) as being anticipated by Agrawal and/or Wang. Claims 28-32 are dependent directly or indirectly on claim 27. Claim 27 recites a method of routing a several nets in a region of a design layout, each net having a set of pins in the region. The method partitions the region into several sub-regions, where several edges exist between the sub-regions. For each combination of a particular edge and a particular net, the method identifies an edge-intersect cost based on the number of potential routes for the particular net that intersect the particular edge, where (1) a potential route for a particular net traverses the set of sub-regions that contain the particular net's set of pins, and (2) at least one particular net includes at least two potential routes. The method selects routes for nets based on the computed edge-intersect costs.

Applicants respectfully submit that neither Agrawal nor Wang discloses, teach, or even suggests such a method. Agrawal describes a <u>placement method</u> that places IC components in an IC layout by partitioning the IC layout into regions. *See* Agrawal, column 3, lines 31-37. Agrawal's placement method uses a cost parameter that is based on <u>probability calculations to place</u> IC components in the IC layout. *See* Agrawal, column 14, lines 1-8 and column 15, line 25-column 16, line 18. Furthermore, Agrawal's probability calculations are used to determine whether the <u>placement</u> is unroutable. *See* Agrawal, column 16, lines 17-22. Agrawal does not describe using probability calculations to select routes for nets based on a computed edge-intersect cost. Therefore, Agrawal does not disclose, teach, or even suggest the method of claim 27 that identifies an edge-intersect cost based on the number of potential routes and <u>selecting routes</u> for nets based on the <u>computed edge-intersect costs</u>.

Wang describes a <u>placement method</u> that places IC components in an IC layout by estimating a density of a bounding box. Wang's placement method uses a probable density calculation to either <u>construct a congestion map</u> and/or predict if a <u>placement</u> is unroutable. *See* Wang, column 7, lines 1-7. Wang does not describe using probability calculations to select routes for nets based on a computed edge-intersect cost. Therefore, Wang does not disclose, teach, or even suggest the method of claim 27 that identifies an edge-intersect cost based on the number of potential routes and <u>selecting routes</u> for nets based on the <u>computed edge-intersect costs</u>.

Furthermore, Applicants respectfully submit that the cited references does not disclose, teach, or even suggest a method that identifies an edge-intersect cost based on the number of potential routes for the particular net that intersect the particular edge, where (1) a potential route for a particular net traverses the set of sub-regions that contain the particular net's set of pins, and (2) <u>at least one particular net includes at least two potential routes</u>.

Accordingly, Applicants respectfully submit that neither Agrawal nor Wang do not render claim 27 unpatentable. As Claims 28-32 are dependent on claim 27, Applicants respectfully submit that claims 28-32 are patentable over Agrawal and/or Wang for at least the reasons that were discussed above in relation to claim 27.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the §102(e) rejection of claims 27-32.

IV.   Rejection of Claims 36-41 Under §102(e)

In the Office Action, the Examiner rejected claims 36-41 under §102(e) as being anticipated by Agrawal and/or Wang. Claims 37-41 are dependent directly or indirectly on claim 36. Claim 36 recites a method of routing several nets in a region of a design layout, each net having a set of pins in the region. The method partitions the region into several sub-regions, where several paths exist between the sub-regions. For each combination of a particular path and a particular net, the method identifies a path-use cost based on the number of potential routes of the particular net that use the particular path, where (1) a potential route for a particular net traverses the set of sub-regions that contain the particular net's set of pins, and (2) where at least one particular net includes at least two potential routes. The method selects routes for the nets based on the computed path-use costs.

Applicants respectfully submit that neither Agrawal nor Wang discloses, teach, or even suggests such a method. Agrawal describes a placement method that places IC components in an IC layout by partitioning the IC layout into regions. *See* Agrawal, column 3, lines 31-37. Agrawal's placement method uses a cost parameter that is based on probability calculations to place IC components in the IC layout. *See* Agrawal, column 14, lines 1-8 and column 15, line 25-column 16, line 18. Furthermore, Agrawal's probability calculations are used to determine

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whether the placement is unroutable. *See* Agrawal, column 16, lines 17-22. Agrawal does not describe using probability calculations to select routes for nets based on a path-use cost. Therefore, Agrawal does not disclose, teach, or even suggest the method of claim 36 that identifies a path-use cost based on the number of potential routes and selecting routes for nets based on the path-use costs.

Wang describes a placement method that places IC components in an IC layout by estimating a density of a bounding box. Wang's placement method uses a probable density calculation to either construct a congestion map and/or predict if a placement is unroutable. *See* Wang, column 7, lines 1-7. Wang does not describe using probability calculations to select routes for nets based on a computed path-use cost. Therefore, Wang does not disclose, teach, or even suggest the method of claim 36 that identifies a path-use cost based on the number of potential routes and selecting routes for nets based on the path-use costs.

Furthermore, Applicants respectfully submit that the cited references does not disclose, teach, or even suggest a method that identifies a path-use cost based on the number of potential routes of the particular net that use the particular path, where (1) a potential route for a particular net traverses the set of sub-regions that contain the particular net's set of pins, and (2) at least one particular net includes at least two potential routes.

Accordingly, Applicants respectfully submit that neither Agrawal nor Wang do not render claim 36 unpatentable. As Claims 37-41 are dependent on claim 36, Applicants respectfully submit that claims 37-41 are patentable over Agrawal and/or Wang for at least the reasons that were discussed above in relation to claim 36.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the §102(e) rejection of claims 36-41.

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V.   Allowable Claims 33-35 and 42-44

In the Office Action, the Examiner objected to claims 33-35 and 42-44 as being dependent upon a rejected base claim. The Examiner stated that claims 33-35 and 42-44 were otherwise allowable if rewritten (1) in independent form and (2) to overcome the above mentioned objections to informalities. Applicants respectfully thank the Examiner for the allowance. However, Applicants respectfully have not rewritten any of these claims in independent form since Applicants respectfully believes that the rejected independent claims 27 and 36 are patentable over the cited reference.

In view of the foregoing, Applicants respectfully request reconsideration of allowable dependent claims 33-35 and 42-44.

CONCLUSION

In view of the foregoing, it is submitted that all pending claims, namely claims 27-44, are in condition for allowance. Reconsideration of the rejections and objections is requested. Allowance is earnestly solicited at the earliest possible date.

Respectfully submitted,

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